REMARKS

Claims 1, 5, 9 and 15 have been amended to improve form, claims 2-4, 10-14, 18 and 19 have been canceled without prejudice or disclaimer and new claims 21-26 have been added. Claims 1, 5-9, 15-17 and 20-26 are now pending in this application.

Claims 9 and 19 have been objected to for minor informalities. Claim 9 has hereby been amended in accordance with the Examiner's suggestion and claim 19 has hereby been canceled. Accordingly, withdrawal of the objection to claim 9 is respectfully requested.

Claims 1, 2, 4-9, 15-18 and 20 have been rejected under 35 U.S.C. § 102(b) as being anticipated by "FinFET – A Self-Aligned Double-Gate MOSFET Scalable to 20 nm", by Digh Hisamoto et al. (hereinafter Hisamoto). Claims 3 and 19 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Hisamoto. The rejections are respectfully traversed.

Claim 1 recites a semiconductor device comprising a substrate, an insulating layer, a fin, a source region and a drain region. Claim 1, as amended, recites that the fin has a width ranging from about 50 Å to about 200 Å and thickness ranging from 600 Å to about 800 Å in a channel region of the semiconductor device. Similar features were previously recited in original claims 2 and 4. As to original claim 2, the Office Action states that Hisamoto discloses a fin having a thickness of 500 Å (Office Action – page 3). Hisamoto may disclose a fin having a thickness of 500 Å (Hisamoto – page 2321 at the last paragraph of the first column). Hisamoto, however, does not disclose or suggest a fin having a thickness ranging from 600 Å to about 800 Å, as recited in amended claim 1.

Claim 1, as amended, also recites that the thickness of the source and drain regions ranges from about 700 Å to 900 Å. A similar feature was previously recited in original claim 3. As to original claim 3, the Office Action states that Hisamoto discloses that the source and drain region thickness is 4000 Å, but states that it would have been obvious to form the source and drain regions

having a desired thickness since discovering an optimum value involves only routine skill in the art and points to In re Boesch for support (Office Action – page 11). The applicants respectfully disagree.

Hisamoto, as admitted in the Office Action, does not disclose forming source and drain regions having a thickness ranging from about 700 Å to 900 Å, as recited in amended claim 1. In contrast, Hisamoto discloses forming source and drain regions have a thickness of 4000 Å, which is significantly greater that the range recited in amended claim 1. The applicants also assert that although the source and drain regions of Hisamoto have a greater thickness than the fin of Hisamoto, the difference in thickness between the source and drain regions and the fin is significantly greater than that required by claim 1. The applicants assert that the claimed ranges of thicknesses with respect to the fin, source region and drain region enable the claimed semiconductor device to exhibit the desired properties (See applicants' specification at, for example, paragraph 39). The applicants further assert that nothing in Hisamoto suggests modifying the 4000 Å thick source and drain regions to the range recited in amended claim 1 and that such a significant modification to the source/drain regions of Hisamoto would not have been obvious to one of ordinary skill in the art based on the disclosure of Hisamoto. The applicants also assert that reliance on per se rules, such as that allegedly established by In re Bosch, is improper when attempting to establish obviousness under 35 U.S.C. § 103. See In re Ochiai, 71 F. 3d 1565, 1570, 37 USPQ2d 1127, 1132 (Fed. Cir. 1995).

For at least these reasons, Hisamoto does not disclose or suggest each of the features of claim 1. Accordingly, withdrawal of the rejection based on Hisamoto is respectfully requested.

Claims 5-9 are dependent on claim 1 and are believed to be allowable over Hisamoto for at least the reasons claim 1 is allowable over Hisamoto. Accordingly, withdrawal of the rejection of claims 5-9 based on Hisamoto is respectfully requested.

Claim 15, as amended, recites features similar to claim 1. For reasons similar to those discussed above with respect to claim 1, claim 15 is believed to be allowable over Hisamoto.

Claims 16, 17 and 20 are dependent on claim 15 and are believed to be allowable over Hisamoto for at least the reasons claim 15 is allowable over Hisamoto. Accordingly, withdrawal of the rejection of claims 16, 17 and 20 based on Hisamoto is respectfully requested.

Claims 1-3, 5-9, 15-17 and 20 have been rejected under 35 U.S.C. § 102(b) as being anticipated by "Sub 50-nm FinFET: PMOS", by Xuejue Huang et al. (hereinafter Huang 1999). Claims 4, 18 and 19 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Huang 1999. The rejections are respectfully traversed.

Claim 1, as amended, recites that the fin has a width ranging from about 50 Å to about 200 Å and thickness ranging from 600 Å to about 800 Å in a channel region of the semiconductor device. Similar features were previously recited in original claims 2 and 4. As to original claim 2, the Office Action states that Huang 1999 discloses a fin having a thickness of 500 Å (Office Action – page 6). The Office Action, however, does not point to any portion of Huang for support. As best understood by the applicants, Huang 1999 discloses forming a fin having a thickness ranging from 15 nm to 30 nm (or 150 Å to 300 Å) (Huang 1999 – page 67 at the last three lines of the second column). Therefore, Huang 1999 does not disclose a fin having a thickness ranging from 600 Å to about 800 Å range, as recited in amended claim 1.

As to the feature recited in original claim 4 (i.e., the fin has a width ranging from about 50 Å to about 200 Å), the Office Action admits that Huang 1999 does not disclose this feature. The

Office Action, however, apparently indicates that the claimed width would have been obvious to one of ordinary skill in the art and cites In re Bosch for support (Office Action – page 11). The applicants respectfully disagree.

The applicants note that no portion of Huang 1999 is pointed to as providing objective motivation for forming a fin having the claimed width. The applicants also assert that such forming a fin having the claimed thickness and width would not have been obvious to one of ordinary skill in the art based on Huang 1999.

Claim 1, as amended, also recites that the thickness of the source and drain regions ranges from about 700 Å to 900 Å. A similar feature was previously recited in original claim 3. As to the feature in original claim 3, the Office Action states that Huang 1999 discloses that the source and drain regions have a thickness of 1000 Å (Office Action – page 6). Huang 1999 may disclose forming silicon-germanium source and drain regions that have a thickness of 1000 Å. Huang 1999, however, does not disclose that the source and drain regions have a thickness ranging from about 700 Å to about 900 Å, as recited in amended claim 1.

For at least these reasons, Huang 1999 does not disclose or suggest each of the features of claim 1. Accordingly, withdrawal of the rejection based on Huang 1999 is respectfully requested.

Claims 5-9 are dependent on claim 1 and are believed to be allowable over Huang 1999 for at least the reasons claim 1 is allowable over Huang 1999. Accordingly, withdrawal of the rejection of claims 5-9 based on Huang 1999 is respectfully requested.

Claim 15, as amended, recites features similar to claim 1. For reasons similar to those discussed above with respect to claim 1, claim 15 is believed to be allowable over Huang 1999.

Claims 16, 17 and 20 are dependent on claim 15 and are believed to be allowable over Huang 1999 for at least the reasons claim 15 is allowable over Huang 1999. Accordingly, withdrawal of the rejection of claims 16, 17 and 20 based on Huang 1999 is respectfully requested.

Claims 1-3, 5-9, 15-17 and 20 have been rejected under 35 U.S.C. § 102(b) as being anticipated by "Sub-50 nm P-Channel FinFET", by Xuejue Huang et al. (hereinafter Huang 2001). Claims 4, 18 and 19 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Huang 2001. The rejections are respectfully traversed.

Claim 1, as amended, recites that the fin has a width ranging from about 50 Å to about 200 Å and thickness ranging from 600 Å to about 800 Å in a channel region of the semiconductor device. Similar features were previously recited in original claims 2 and 4. As to the feature recited in original claim 4 (i.e., the fin has a width ranging from about 50 Å to about 200 Å), the Office Action admits that Huang 2001 does not disclose this feature. The Office Action, however, apparently indicates that the claimed width would have been obvious to one of ordinary skill in the art and cites In re Bosch for support (Office Action – page 11). The applicants respectfully disagree.

The applicants note that no portion of Huang 2001 is pointed to as providing objective motivation for forming a fin having the claimed width. The applicants also assert that forming a fin having the claimed thickness and width would not have been obvious to one of ordinary skill in the art based on Huang 2001.

Claim 1, as amended, also recites that the thickness of the source and drain regions ranges from about 700 Å to 900 Å. A similar feature was previously recited in original claim 3. As to the feature in original claim 3, the Office Action states that Huang 2001 discloses that the source and drain regions have a thickness of 1000 Å (Office Action – page 8). Huang 2001 may disclose

forming silicon-germanium source and drain regions that have a thickness of 1000 Å. Huang 2001, however, does not disclose that the source and drain regions have a thickness ranging from about 700 Å to about 900 Å, as recited in amended claim 1.

For at least these reasons, Huang 2001 does not disclose or suggest each of the features of claim 1. Accordingly, withdrawal of the rejection based on Huang 2001 is respectfully requested.

Claims 5-9 are dependent on claim 1 and are believed to be allowable over Huang 2001 for at least the reasons claim 1 is allowable over Huang 2001. Accordingly, withdrawal of the rejection of claims 5-9 based on Huang 2001 is respectfully requested.

Claim 15, as amended, recites features similar to claim 1. For reasons similar to those discussed above with respect to claim 1, claim 15 is believed to be allowable over Huang 2001.

Claims 16, 17 and 20 are dependent on claim 15 and are believed to be allowable over Huang 2001 for at least the reasons claim 15 is allowable over Huang 2001. Accordingly, withdrawal of the rejection of claims 16, 17 and 20 based on Huang 2001 is respectfully requested.

NEW CLAIMS

New claims 21-26 have been added. These claims variously depend on claims 1 and 15 and are believed to be allowable for at least the reasons claims 1 and 15 are allowable. In addition, these claims recite features not disclosed or suggested by the art of record.

For example, claim 21 recites that the gate has a thickness ranging from about 300 Å to about 800 Å. The art of record does not disclose or suggest this feature. Claim 22 recites that the at least one dielectric layer formed over a top surface of the fin comprises an oxide layer and a nitride layer formed on the oxide layer. The art of record does not disclose or suggest these features. Claim 23 recites that the at least one dielectric layer formed over a top surface of the fin has a

thickness ranging from about 10 Å to about 20 Å. The art of record does not disclose or suggest this feature.

Claims 24-26 recite features similar to claims 21-23 and are believed to be allowable for reasons similar to those discussed above with respect to claims 21-23. Accordingly, allowance of claims 21-26 is respectfully requested.

CONCLUSION

In view of the foregoing amendments and remarks, the applicants respectfully request withdrawal of the outstanding rejection and the timely allowance of this application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 50-1070 and please credit any excess fees to such deposit account.

Respectfully submitted,

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